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ABSTRACT

A prospectus providing a rational basis for decision and action in the field of dental hygiene is presented, noting that all occupations are obliged to assess their value to society and take whatever actions are indicated to fulfill their social contract. A philosophical and conceptual foundation for change is examined. Three chapters focus on the following: societal trends and issues for health care (changes in American demographics and social structure, changes in American values, the issue of health care costs, the issue of quality health care, and status of oral disease); dental hygiene practice (American values and dental hygiene practice, broader perspectives of preventive practice, diversity of practice configurations and practice sites, and diversity of role responsibilities); and dental hygiene education in the future (to allow for the reorganization of professional courses to prepare dental hygienists for 21st century practice). The American Dental Hygienists' Association has committed its resources to programs which will contribute to the orderly evolution of dental hygiene and is implementing programs to do such things as: obtain comprehensive nationwide demographic data on dental hygienists; promote and support masters degree programs in dental hygiene education; and promote and support education of dental hygienists at the doctoral level in social, biomedical, and behavioral sciences. Contains 96 references. (SM)

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PREFACE

All occupations have an obligation to assess their relevance and value to society periodically and to take whatever actions are indicated to fulfill their social contract

To fulfill its responsibility for self-assessment, dental hygiene through the American Dental Hygienists' Association has drawn on a variety of resources to provide the basis for logical projections of future dental hygiene practice and education, with public benefit as the ultimate goal. It would be naive to suggest that dental hygiene will not benefit; certainly an occupation or profession will gain from commitment to service that is directed toward meeting public needs. However, unless public interest and need are its primary focus an

occupation or profession will not fulfill its potential, or survive in the long term.

The Association has conferred with experts in higher education and health professions education, health systems administrators, sociologists, political scientists, consumer advocates and legislative advocates. Reports and current literature related to societal trends, health care delivery, and health workers' education have been considered. Through national workshops practicing dental hygienists and dental hygiene educators from all regions of the country have reached consensus on all major issues.

The interest and assistance of agencies, organizations and individuals who have contributed directly and indirectly to the development of the prospectus for the future of dental hygiene is appreciated. They challenged established beliefs, traditions and practices; and presented issues that must be addressed.

The Association particularly thanks the members of the Steering Committee for the Workshops on the Future of Dental Hygiene Practice and Education:

Pauline Brine	Pauline Schmidt
Sara Dunham	Cathy Schwab
Charlotte Hangorsky	Cathy Turbyne
Linda Kraemer	Cheryl Westphal
Margaret Ryan	Sally Winship

Their efforts have resulted in a prospectus which provides a rational basis for decision and action which ultimately will benefit society.

INTRODUCTION

The profound changes which are rapidly occurring in society and the new systems and priorities for health services which are evolving to accommodate societal changes require assessment of dental hygiene practice and education at this time. Thoughtful consideration of dental hygiene's place as a health promotion and disease prevention resource in evolving systems and priorities is in order.

Information on societal trends and research on disease processes and prevention and treatment modalities is sufficient to project the future of dental hygiene practice. The effectiveness of prevention modalities in reducing dental caries is clearly established. Further, there is

convincing evidence that sustaining a reduction in caries incidence and gaining similar reductions in the incidence of other oral diseases will require diligent monitoring, increased and modified educational efforts, and modified therapeutic interventions.

It is recognized that the data base for projecting the future of dental hygiene or any profession is incomplete. Some information, such as definitive manpower data, validation of projected roles, or economic impact of projected practice is not yet available. In some instances, constraints have been placed on research that is needed to answer legitimate questions. Researchers, various agencies and the American Dental Hygienists' Association are directing attention to obtaining answers to important questions in these areas. When additional data become available, plans for the future can be modified. However, data are sufficient to plan for change. To delay planning and action until more information is available is inadvisable because changes are occurring at a pace that far outstrips the pace of research. In many instances changes must be made to provide data.

The *Prospectus* is based on prognostications of recognized futurists, epidemiological studies, analyses of health problems and issues, and priorities identified by national and international study groups. Reports of other organizations of health professionals, reports of government agencies, and literature on trends and issues in higher education and health occupations education also have been utilized.

The American Dental Hygienists' Association has been committed to providing the best possible forecast of future conditions which will

determine the nature of health professions' education and practice. It also has been committed to providing a framework for change that is based on analyses of trends and their implications for the public's health and for dental hygiene. All information leads to the following conclusions: dental hygiene must be integrated into evolving systems of society if oral health needs of the public are to be met; dental hygiene must change in dramatic but deliberate ways to provide for such integration; changes in dental hygiene education and practice will occur only if dental hygiene takes responsibility for its future.

The *Prospectus* is the philosophical and conceptual foundation for change. Modifications in the specific aspects of change can be made as more data become available. Although the practice of dental hygiene has changed markedly in the past 25 years, the changes have been slow and have varied significantly throughout the country. The historical nature, pace and geographic variation in the evolution of dental hygiene cannot be tolerated in a democratic society that has unmet needs and places high value on equitable distribution of cost effective health services. Current values, skills and roles of dental hygienists should not be abandoned, but should be built upon and adapted. The foundation of dental hygiene practice has been health promotion, which includes education for consumers' self-care, conservative therapy to arrest diseases, palliative care to provide comfort and preventive services to reduce the incidence of oral diseases.

The section of the *Prospectus* entitled, "Societal Trends and Issues for Health Care," includes a summary of those trends which will have major influence on the nature of health occupations and how members of those occupations will practice. Support for the premise

that health care priorities and delivery will change significantly in the future is substantial. As public resources, health occupations must plan for and initiate adaptations in their practice and education to accommodate projected changes in the economic and social structure of the nation.

Predictions of the scope and nature of future dental hygiene practice must be made to provide a framework for effecting changes to accommodate evolving needs, priorities, and systems. The general nature of dental hygiene practice and characteristics dental hygienists will need in the future are projected in the section of the *Prospectus* entitled "Dental Hygiene Practice." Those projections are based on conditions which are influencing practice today and trends which will determine the nature of health care and health occupations in the future. Such projections are necessary to provide a basis for educational reform to prepare dental hygienists for future practice, and for transition from current to future practice.

The ability of an occupation to adapt is related directly to the nature of education for the occupation. The philosophy and general content of education which will be required to prepare dental hygienists for practice in the near future, and to adapt their practice to changing societal needs and health systems in the 21st century are projected in the section entitled, "Dental Hygiene Education for the Future." The projections are based on data on dental hygiene education; consensus of dental hygiene practitioners and educators; conditions, priorities and trends in higher education; and forecasts of dental hygiene practice in the future.

CHAPTER I: SOCIETAL TRENDS & ISSUES FOR HEALTH CARE

Changes occurring in American society are taking place at an unprecedented rate.[1] It is expected that this rate of change will accelerate as the United States continues to move from an industrial based society to a new era referred to by some as the post-industrial society, or by others as the information-based society. The most dramatic changes are expected to focus on the transformation of the economy, the redefinition of occupational systems, and the relationship between science and technology.[2] Since the characteristics of future society will dictate the nature of health care policy, organization and delivery, it is important to understand emerging societal trends and the implications of these trends for the future provision of oral health promotion and disease prevention practices.

CHANGES IN AMERICAN DEMOGRAPHICS AND SOCIAL STRUCTURE

Population and socioeconomic demographics characterize an American society in transition. Perhaps the most pervasive trend is one that depicts an ever-growing aging population in a society in which birth expectations are to remain low. Long-term projections suggest that by the year 2080, the elderly dependency ratio will be larger than the dependency ratio for children.[3] Currently, 12 percent of the entire population is 65 years or older and this percentage is expected to increase to 13 percent by the year 2000, and to 21 percent by 2030.[3] Ramifications for a society in which the population age 65 and older is expected to reach 65 million by the year 2030 are significant.

Changes in the 1980 population demographics also show a substantial increase in the poverty population when compared with the previous decade. For example, in 1983 the number of poor was estimated to be 35.3 million or 15.2 percent of the total population.[3] This is in contrast to the 1970s with the number of poor ranging from a low of 23 million (11.1 percent) to a high of 26 million (12.6 percent).[3] The 1983 breakdown of poverty rates according to ethnic origin showed the largest percentage rate for blacks (35.1 percent), followed by Hispanics (28.4 percent) and the lowest for whites (12.1 percent).[3] Nearly one-half of all poor families in 1983 were headed by women with about one in five of these families below the poverty line.[3] In fact, since 1980 families headed by women have accounted for about two-fifths of the increase in number of poor families.[3]

Demographic trends of the 1980s show declining stability in the family unit. There has been growth in singlehood and divorce, a decline in

married couples with children, and a rise in two-earner families.[4] American families and households have been transformed as a result of increases in: (1) the number of single-person households, (2) the percentage of elderly in the total population, (3) the number of single-parent families, and (4) the percentage of married women in the labor force.[5] These trends affect not only family life but create increased stress on the institutions that families rely on for support; such as health, education and welfare institutions.

In addressing changes occurring in American family patterns the President's Commission for a National Agenda for the Eighties focused on the unmet needs of the nation's children. Some of the examples cited follow.

1. There is a lack of a comprehensive system to guarantee adequate health care to families in the United States.

2. There is a scarcity of family housing because of high housing costs and shortages of adequate rental units. This condition has had a disproportionate impact on minority families and families headed by women.

3. Financial resources for needy families for child rearing are inadequate. One of six children lives in poverty, thus making children the poorest group in America.

4. There is a need to improve the living conditions of minority parents and their children since one out of four Hispanic children and two out of five black children live in poverty.[5]

Society has addressed these social problems as separate, unrelated issues. This has resulted in the use of piecemeal interventions. The failure of this approach suggests the need for institutions responsible for resolving social problems to develop cooperative, coherent, interrelated policies and strategies.

The rapid growth economy that followed World War II led to a prosperity that characterized the United States as an affluent society. This society now is described as a slow-growth society.[5] It is a nation competing for scarce natural resources in a global economy where goods imported now exceed those exported. This loss of international competitiveness and the loss of growth in productivity has resulted in change in the occupational structure of the economy.

Indications of the structural and technological changes taking place in society are seen in changes occurring in employment patterns. This is shown in the employment decline in large, heavy manufacturing and other blue collar industries, and employment increases in white collar and service occupations. Further evidence of this trend is seen in changes occurring in occupational classes. From 1972 to 1983, occupations classified as machine operators, assemblers, and inspectors experienced the largest numerical loss. The largest numerical gain was in professional specialty occupations with the largest proportional gain in occupations classified as technicians and related support occupations.[3]

Changes also have occurred in earnings distribution. For example, the share of families with middle class income fell from 27 percent in 1969 to 23 percent in 1983.[6] It is a finding that remains constant whether

using the Census Bureau definition of family or when single person households and households of unrelated persons living together are included in the definition. Additionally, as the middle class shares have decreased, both the upper and lower class shares have increased. In the words of one analyst the country is moving in the direction of becoming a nation of "have and have-nots" with less in between.[7] Again, these shifts in earning distribution may be attributed to changes occurring in the occupational structure of the economy, which in turn are indicative of changes in the industrial structure and technology of society.

As has been stated in the President's Commission for a National Agenda for the Eighties, one of the most difficult problems to address in a slow-growth economy relates to income redistribution, since projections based on recent economic conditions suggest that income reversals would most noticeably affect the poor. The Commission believes that one fundamental dilemma in American society today is how to control government expenditures and concurrently maintain essential entitlement programs. They predict that the relatively high unemployment levels and the aging of the population will exert pressure on the financing of social security programs. This coupled with low real economic growth rates will lead to a crisis atmosphere in the funding of social programs which will continue well into the final decade of this century and possibly beyond.[8]

CHANGES IN AMERICAN VALUES

Much has been written on changing American values. Alex Inkeles, in The Third Century, identifies three shifts which appear to be taking place in the character of Americans.[9] These shifts are the erosion of political confidence, an increasing tolerance for diversity, and the decline in previously held ethics. Some observers have characterized the present decade as one of conflicting values in which Americans want and expect to have a higher standard of living, as well as the new amenities that were promised during the decades of rapid economic growth. Bell has described the standard of living in post-industrial society as one that will be measured by the quality of life, not by the quality of goods. Quality of life will be measured by services and amenities such as health, education, recreation and the arts. He further states that:

> The claims to the good life which the society has promised become centered on the two areas that are fundamental to that life--health and education. The elimination of disease and the increasing numbers of people who can live out a full life, plus the efforts to expand the span of life, make health services a crucial feature of modern society; and the growth of technical requirements and professional skills makes education, and access to higher education, the condition of entry into the post-industrial society itself.[2]

The value of education remains a high priority in American society. The educational level of the nation continues to rise with three out of four adults 25 years and older having been graduated from high school.

While Americans place education as a major priority, the rising national level of education has contributed toward making individuals feel dissatisfied with their personal level of educational achievement.[5]

In the health field one example of changing American values relates to the consumerism movement. Although in an ethical sense Americans have supported the right to health care, consumers now have become more vocal in claiming the right to quality care. There is further evidence to suggest that consumers are attempting to renegotiate their relationship with health care providers.[10] They are interested in personalized and decentralized delivery of services; they are more frequently requesting a wider range of health care options; and they want greater participation and control over decisions affecting their health.[11] Those attracted to alternative services tend to be the more educated and nearly all of them have health insurance. Again, it has been found that it is the educated consumer who is more likely to shop around for specialized medicine, or to travel to other communities for medical care without a physician's referral, or to participate in wellness programs.[11]

Americans also have shown interest in healthier lifestyles as evidenced by their growing interest in proper diet, regular exercise and in smoking, alcohol and drug dependency treatment programs. One out of five Americans have participated in some type of health education or wellness program.[12] They also are demonstrating increased interest in concepts of medical self care. It is estimated that in 1983, sales for nutritional supplements totaled 2.7 billion dollars.[12] Consumer

support for lifestyles emphasizing prevention and wellness is well documented.

Consumers not only have bought into the concept of a healthier America, they have become health activists. The current concern for change in health care delivery has been attributed largely to legal and consumer demands rather than to health care providers or established institutions.[13] As a result, institutions and the providers of health care have fallen behind consumer demands.

THE ISSUE OF HEALTH CARE COSTS

Another socioeconomic issue of growing national concern is the escalating cost of health care.[14] In 1985, Americans spent $425 billion for health care, which was the highest level in history and equivalent to almost 11 percent of all goods and services produced.[15] Projected growth in national health expenditures is expected to increase to $640 billion by 1990.[16] Reasons suggested for these rising health costs, as reported by the principal institutions providing health care services, included increased consumer utilization, higher costs per unit of service, duplication of services, and higher salaries for health personnel. Other critics of the large expenditures for health care have pointed out that the system is skewed toward therapy rather than prevention, that the coordination and quality of care leaves much to be desired, and that implementation of mechanisms to ensure the efficient delivery of health services is seriously hampered by statutory and administrative regulations. The difficulty many low income people have in obtaining needed services and

the serious deficiencies that exist in the provision of health care for the elderly, especially the feeble aged, also have been criticized.

One major response for curbing escalating costs and improving efficiency in health care delivery has been to promote increased competition among health insurance companies and other types of health financing systems.[17] It is intended that this will increase pressure on the providers to be more cost competitive in the provision of health care. Additionally, since the increased competition among carriers will offer the consumer more coverage options, consumers will become more cost conscious in their selection of carriers. Critics of the proposal question whether market oriented reforms will succeed because of major differences between the conventional market relations; that is, the production, distribution and consumption of goods, and the purchase and provision of health care.[18] Another concern of those who question using competitive market reforms to contain health care costs is that the price of cost containment will be at the expense of both quality and availability of care.

Those who view deficiencies in health care from a broader perspective believe that reform will require major changes in social and regulatory structures.[19,20] They support the need to change not only the social form of financing health care but also the delivery of care. This would allow for more deliberate organization of health care, for rational regulation to promote quality and avert abuse, and for assuring the availability of more strategies to provide for individual health service needs.

Whatever configuration the future of health care will take, health has become a major priority in American society. It also can be projected with reasonable assurance that efforts to contain rising health costs will lead to increased experimentation with more innovative approaches in the delivery of care. Roemer has stated that the health insurance movement in other countries began as a social process to ease the economic pressures of the working people. This led to concern for finding more efficient patterns for providing care and in several countries it served as the prelude for massive changes in health care delivery.[10] The current health insurance movement in the U.S. also may provide the impetus for the development of more comprehensive, coordinated and equitable delivery systems.

THE ISSUE OF QUALITY HEALTH CARE

Significant advancements have been made in scientific and technologic aspects of health. The general level of health care also has improved. However, there have not been comparable improvements in access as it relates to the need for health care.[19] Access to health care traditionally has been perceived as a factor which comes into play once an individual has made the decision to seek care. By restricting the definition of access to the point at which the individual has made the decision to seek care limits its usefulness. When defined from a broader context, access involves both the individual's recognition of the problem and the decision to resolve the problem. The individual may perceive the need for care but not seek care because of access problems; such as unfamiliarity with the health care system, or fear of embarrassment among peers, or lack of a care facility to leave children during the time health services would be provided. Even when

economic barriers have been reduced, factors such as maldistribution of health care resources, bureaucratic obstacles, and individual differences which are aspects of access, interfere with the use of health services.[19]

Again defining access from a broader perspective includes the provider's management of the consumer's perception of need. Inappropriate management may be the result of: nonrational delineation of a provider's roles; number and type of health personnel; mix of services offered for the targeted population; inadequate network systems resulting in fragmentation, or duplication or contrary intervention regimens; and ineffective communication either between the individual and the health care provider(s) or among the providers. From this broader perspective, provider imposed utilization barriers become a more influential determinant of health care than traditionally has been acknowledged.

Since quality of care has a broader conceptual base than clinical or technical aspects of health care provision, change must be made at the system level with the incorporation of a different philosophy regarding the relationships between consumer and providers and between and among providers. It has been shown that consumer access to initial care is improved when medical facilities are highly decentralized even though such services are not as comprehensive and are less effective in utilizing specialized personnel.[19] It also has been stated that the most appropriate choice of health care organization would depend on the characteristics of the population being served. In populations with sociocultural and environmental difficulties that create barriers to medical care, ready access and outreach must be essential features of

care. It is further suggested that one single model of care is not adaptive to accommodate the needs of diverse populations for health care.[19]

> It is essential to consider the role of first contact care in relation to the typical constellation of problems in the community. A functional and appropriate allocation of tasks can be made only by considering typical problems and developing a realistic role structure to deal with them. The failure to adopt such a perspective has perpetuated the reliance on a single model of care that is exceedingly expensive and, in many ways, ill fitted to cope appropriately with more common types of complaints.[19]

Existing and projected disease patterns are another primary factor affecting how health care is organized and delivered. The changing age distribution in the United States, with a steadily growing older population, again brings into question the appropriateness of a single health care model which is basically designed for the episodic user of health care. Not only are chronic and disability illnesses common among older populations, they are found more frequently among the poor.[10] It is well documented that both morbidity and mortality are highest among the poor [21] and that preventable illnesses more often affect children of poverty. Chronic and long term illnesses require different concepts of care and recovery with emphasis on palliative rather than curative therapies. Therefore, monitoring, maintenance and patient support systems become a major focus of health care with the protracted caring environment becoming more often the home rather than the hospital.

Although it would seem logical to expand primary preventive care networks, more than making incremental changes in the existing model is required to develop a rational system. Health care in the United States today is organized from a provider rather than a consumer perspective. For that emphasis to be reversed, systems would have to be designed from a population perspective with the number and appropriate mix of providers and health care resources based on epidemiological findings of specific populations.[10,19] This would necessitate more comprehensive health care planning within predetermined geographic areas and the development of defined and coordinated networks. Such changes would ensure linkage of the population to relevant resources and linkage among the various components as well.

In summary, one major problem in providing quality health care is utilization of, and access to, the care delivery system. In addressing the issue of access, emphasis has focused traditionally on consumer rather than on provider imposed barriers. Resolutions of utilization and access problems need to be directed toward developing a health care system which has a broader conceptual base than clinical or technical aspects of health care provision. When designing a new health care system, consideration should include: development of different consumer and provider relationships, decentralized entry points, rationalized division of labor, and multiple models to accommodate different types of users.

STATUS OF ORAL DISEASE

Changing oral disease patterns show a significant decline in the prevalence of dental caries.[22] This reduction is evident not only in the United States but among children and adolescents in other industrialized countries as well.[23] Although it is not known if the full extent of this decline has been experienced, some observers believe that the decline will level off; others suggest that this trend could be reversed. There also is evidence of change in the type of carious lesions, with a decline in proximal smooth surface lesions; which has implications for reducing the complexities of restorative procedures. There will, however, be a continued need for the next two or three decades to control root caries in the now aging population who grew up when dental caries was considered to be the major oral health problem. Evidence does suggest that root caries may be controlled through fluoride therapy which probably can best be managed by including fluoride interventions as part of a preventive periodontal regimen.[22]

Changing concepts of periodontal diseases also have implications for future oral disease trends. Deficiencies in methods to standardize measurement of periodontal diseases limit the ability to predict the prevalence and severity of these diseases. However, based on current understanding of the pathogenesis of chronic periodontal diseases,[23,24] if periodontitis occurs it may or may not result in aveolar bone loss. As reported by the Working Group on the Changing Patterns of Oral Health of the Federation Dentaire International and the World Health Organization:

> If periodontitis does result it may manifest itself clinically two ways--as a contained form or as a progressive form. Estimates now appearing in the literature appear to indicate that between 10-15 percent of people may be considered at "high risk" of succumbing to the progressive form of periodontal disease...This fundamental reappraisal is now having an effect upon the assessment of treatment needed.[23]

Addressing oral health personnel needs in relation to changing caries prevalence and concepts of periodontal diseases the Working Group summarized:

> In the next 20-40 years there will also be a very great change of emphasis in oral care services provided. In children and young adults extensive restorative treatment will not be the norm; prevention and simple restorations will be the order of the day. Restorative care for increasing numbers of elderly who retain their teeth will demand increased operative skills. Thus there will be a polarization of treatment needs: very simple for the young cohorts and complex for the increasingly dentally aware middle-aged and elderly.[23]

CHAPTER II: DENTAL HYGIENE PRACTICE

Changes occurring in population demographics, disease patterns, and in the social structure and culture of society have significant implications for the future practice of dental hygiene. Dental hygiene has a responsibility to the public to move beyond maintaining the status quo. This premise is based on the advancements made in prevention technology, the increased percentage of dental consumers requiring dental hygiene services only and rising public expectation for preventive health care. Escalating costs of health care and increased consumer interest in accessible and quality health care are other factors that have increased awareness of the need to further direct attention to compliance behavior, health maintenance practices, and alternate delivery systems.

The literature is consistent in the prediction that there will be a change in the type of oral health/dental services needed, expected and provided. However, there is some disagreement on whether the

declining caries rate will continue and whether there will be a similar decline in periodontal disease.[22,23,24,25] Resolution of problems related to the prevention of caries has advanced in the form of fluorides and sealants. The application of these measures to controlling public health problems does not rely on the educational orientation and expertise of the dentist.[26] The application of preventive modalities is the basis of dental hygiene practice.

It is a conclusion of researchers that ". . . traditional dental care does not prevent the progression of caries and periodontal disease in an adult population".[27] Studies indicate that frequent evaluation, reinstruction, scaling and root planing are required to maintain the standard of oral hygiene needed to sustain caries reduction in adult years, as well as to control periodontal diseases.[27,28] Evidence that periodontitis is site specific and episodic dictates individualized and frequent monitoring, and periodic site specific therapy.[24,29]

As advances are made in identifying modalities for controlling periodontal diseases, they will be applied in both public programs and private health care systems. The hygienist has the orientation to concentrate on modalities which capitalize on breakthroughs in controlling periodontal diseases.[30] Although the technical aspects of dental hygiene clinical care may not change significantly, decisions required for selection and application of appropriate interventions will be based on comprehensive knowledge of assessment criteria.

The relationship between modalities for preventing periodontal diseases and dental hygiene practice is recognized in considerations of demographic and oral disease trends, and economic issues associated

with establishing priorities for health services.[22,30] The pivotal position of dental hygiene in the provision of cost effective oral health care is underscored in the 1983 position paper of the American Association of Public Health Dentists which was prepared by the Subcommittee on Preventive Periodontics:

> Searching analysis of both literature and practice, however, will reveal that it is the dental hygienist-of all those in the dental professional hierarchy-who is the critical element in that same scheme (i.e., the global scheme of preventive periodontics).
>
> Because of a complex of social, political, legal and economic factors, however, the full potential of the hygienist resource has not been brought to bear optimally on the nation's primary oral health problem.[30]

The Subcommittee noted evidence of dental hygienists' skills and further stated that "...it is logical to regard the dental hygienist as the primary preventive therapist in periodontics".[30]

Schoen has stated that there is little evidence that the resolution of current problems including the elimination of dental disease as a major public health problem will be accomplished only through radical alteration in the organization and financing of dental care delivery. He believes that there is need for a new primary care provider, "an outgrowth of today's hygienist," who is able to diagnose and treat most dental diseases, recognize extreme conditions which should be referred to a dentist and utilize behavioral modification strategies in promoting preventive self-care. Based on the approaches that have

been proposed for future education of dental practitioners and concerns regarding practice economics, he does not perceive that those needs will be met by dentists.[31]

A parallel can be drawn with a primary care nurse who serves as a generalist in a structured health care team. The primary care nurse maintains health, defines problems, evaluates needs, implements and coordinates health action, educates patients/clients and coworkers and assesses outcomes.[32] Primary care hygienists would work in association with health professionals including dentists and other members of multidisciplinary primary care teams. They would relate to patients on an ongoing one to one basis and assume major responsibility for providing primary preventive care and for securing the required health services when referring for secondary and tertiary care. This is one example of integrating the dental hygienist's traditional role into emerging health care systems.

In writing about the role of the dental hygienist as a patient advocate in a program for disabled individuals, Lancial also describes the dental hygienist as a primary provider who functions as a facilitator in the patient's utilization of a coordinated and complex service system.[33] As health services system(s) become more complex the need for dental hygienists who assess, refer, monitor, coordinate and evaluate oral health care will increase. Health maintenance organizations offer an example of farsightedness in utilizing hygienists in management and research roles in conjunction with clinical and educational roles.

AMERICAN VALUES AND DENTAL HYGIENE PRACTICE

Changing American values have direct implications for dental hygiene practitioners. Dental hygienists need to develop broader social and ethical perspectives. Hygienists need to relate the origin of one human problem to others as, for example, the environmental living problems of the poor with issues involving health and education, or to understand from an ethical viewpoint that quality of health care involves issues of equality in access as well as availability of care. Dental hygienists need to develop increased awareness of ethical issues that underlie practice interventions and to have the knowledge and integrity to modify practices accordingly.

For example, dental hygienists must view oral disease prevention as an intervention that identifies oral disease risk factors and develops with the patient/client specific prevention and control procedures. They must view treatment planning not as an organized list of routine procedures to be performed by the provider on patients, but as a plan requiring mutual patient and provider decision making in establishing health maintenance priorities. Dental hygienists must view anesthesia not as a technique, but as a patient's right to treatment without pain. They also must view completeness of services not on the basis of time allowed by the dentist, but rather on patient needs and appropriate preventive interventions.

BROADER PERSPECTIVES OF PREVENTIVE PRACTICE

For dental hygienists to function with credibility and expertise in contemporary society, they must understand the concept of prevention as a complex social undertaking. Currently, dental hygienists rely on experience and observation as the primary method of inquiry to address complex interrelationships among patient, provider and delivery systems. Such an approach results in the limited effectiveness of health promotion and disease prevention strategies. This can be attributed, in general, to the lack of an operational framework in the social, economic and political sciences and to an unrealistic understanding of human behavior. This limited contextual reference results in addressing problems from a clinical rather than from a social perspective. For example, the traditional sequence for recommending health promotion or preventive behaviors is based on the clinical model, that of defining the problem, developing and implementing a treatment regimen to resolve the problem. In contrast, using a social interaction model the sequence would be to apply multiple criteria to data, refine the criteria, develop alternatives and conduct a series of trials to solve or reformulate the problem. Such an approach would more realistically consider the range of preventive interventions and would allow for the provision of alternatives in striving to meet attainable outcomes.

Dental hygienists need to identify the myriad of psychosocial, economic and political variables involved in problem solving related to health intervention. They also need to be able to make a distinction between problems that can be solved definitively, those which are a succession of problems, and those which have no attainable solutions. For example,

currently dental hygienists approach preventive treatment planning as selection of procedures that will be performed on a patient within a specific time and be repeated with minor variations at provider convenient prearranged intervals, i.e., scaling, polishing and oral hygiene instruction in one-hour, six-month recall appointments. The future practitioner will view dental hygiene treatment planning as making decisions with the patient regarding the consumer's priorities for health maintenance. These decisions will be based on disease risk factors as well as the psychosocial and cultural characteristics of the individual patient/client.

Currently the dental hygienist is an implementer of preventive treatment plans developed by a dentist. Although the hygienist does make decisions regarding oral hygiene recommendations or in some cases determines how much time is needed to complete the assigned task, the hygienist implements a specific section of a plan developed by someone else. The practitioner of the future will be the point of first contact for many patients. As a primary care provider the hygienist will assess patient conditions, and will identify disease risk factors, patient priorities, and the social, cultural and economic factors which affect the individual. The hygienist then will develop a modality to deal with disease prevention and health maintenance. As conditions warrant, the patient will be referred to appropriate health care professionals for further diagnostic evaluation and treatment. The future practitioner must have the ability to prioritize treatment and the expertise to implement self-generated preventive treatment regimes.

DIVERSITY OF PRACTICE CONFIGURATIONS AND PRACTICE SITES

Organization and delivery of health care should be based on existing and projected disease patterns. The changing demography of the United States brings into question the adequacy of the existing delivery system of health care. With a steadily increasing older population and a growing number of minorities and poor, with 40 percent of the poor being children, different concepts of care and configurations of health care delivery will be required.

Hygienists need to expand their perspective of where, how and by whom future oral health care will be delivered. They need to envision an increasing reliance on epidemiological data to provide community or regional profiles which will include information on socioeconomic characteristics, cultural values, and health needs of targeted populations. It is feasible and highly probable that such profiles will be used to determine the location, type and level of health care available. Facilities and other needed resources including referral networks and the mix of health personnel required will be determined by the nature of health services provided. In other words, health care will be more focused on meeting specific population needs with greater emphasis on those populations presently underserved or who use the current system only for emergency treatment.

DIVERSITY OF ROLE RESPONSIBILITIES

Different configurations of health care will require hygienists to be prepared for different role responsibilities and the roles assumed will be influenced by the population served. Although all hygienists

will be prepared with the knowledge base and skills necessary to provide preventive, interceptive, therapeutic, stabilizing, palliative, and facilitating interventions, the mix of interventions used will vary with the population served and the nature of the type of health care provided. For example, hygiene interventions used in a long-term care facility may emphasize more facilitating, stabilizing or palliative interventions. This will require dental hygienists to place increased emphasis on monitoring, managing and evaluating preventive interventions. Teaching patients/staff to recognize new symptoms of oral disease and to use various self help therapies will be important aspects of intervention. Counseling patients/staff in how to use consumer products, when to use them, and contraindications for use will require hygienists to have the scientific basis for justifying the consumer products recommended. They also will need to continually document and evaluate product outcomes in relation to general systemic and oral tissue responses.

In contrast, a hygienist employed in a satellite regional health care center for a predominately youthful population may provide almost exclusively primary preventive, interceptive and therapeutic interventions. Again, this could be contrasted with the role responsibilities of the hygienist employed in a heavily populated, low-income environment. In this instance, the need to place increased emphasis on facilitating interventions probably would be appropriate. Such interventions would include networking with other health and social service workers on overall environment needs; capitalizing on working with the existing social and cultural values and attitudes of the population to develop oral health behaviors compatible with the population's needs; and negotiating innovative changes in oral care

delivery patterns that will enhance accessibility and completeness of dental treatment.

Working with diverse populations within different administrative organizational configurations, and with varying role authority and responsibilities will require hygienists to develop new analytical skills which will allow them to process information in nonroutine ways. Similarly, to adapt to different work sites throughout their careers, hygienists will need to have an integrative mode of operation which will enable them to work across boundaries from one work environment to another.

From the stated projections on future dental hygiene practice it would appear that dental hygiene is in focus with identified societal trends. It is the manner in which dental hygienists work that needs redefinition. Such redefinition suggests a hygienist who is engaged in concept-guided work. The hygienist of the future is a worker who is recognized as being responsible for routine oral health management and for referring the complex problems appropriately. The hygienist also is a worker who can add quality and coordination to the delivery of care for complex problems. The hygienist is a worker who can accommodate changing distribution of authority and responsibility between provider and consumer. The hygienist is a worker able to develop intervention plans using a broad range of factors. These characteristics describe the future dental hygienist as both a decision-maker and an implementer of appropriate interventions; a generalist whose integrative mode of operation allows for maximum utilization and adaptability.

CHAPTER III: DENTAL HYGIENE EDUCATION IN THE FUTURE

The magnitude of social, economic and technological change will create new demands on both dental hygiene educators and practitioners. Since the nature of change is unpredictable, dental hygiene's future will be determined by its adaptability. Dental hygiene is in a pivotal position to respond to changes in oral disease patterns, to the public's participation in oral health care, to alterations in methods for monitoring and maintaining health, and to changes in the type of settings where such services will be provided. Dental hygiene's ability to move forward in these areas and use its specialty to make an indelible imprint on the oral health status of society will be determined largely by its competence in the context as well as the skills of practice. Without contextual understanding of the biologic, social, economic and ethical implications of dental hygiene work,

technology will be applied without reference to the changing environment.

Change in the educational system will be required to prepare future dental hygiene practitioners with more diverse and sophisticated intellectual skills. Educational requirements which will emanate from changes in the hygienist's work responsibilities will include the:

ability to communicate and negotiate with intellectual credibility and with an increased level of human understanding;

ability to formulate numerous alternatives for reaching varying end points;

ability to assess individual client or community-wide needs;

ability to improve measurement of oral health status;

ability to set up oral disease prevention and control programs;

ability to critique work and to evaluate care provided;

ability to understand health care delivery systems and the relationship of component parts of the system, such as financing, delivery modes, and quality control; and the

ability to reshape concepts guiding dental hygiene practice when the empirical world indicates that is necessary.

It is a logical assumption that such educational preparation will require the integration of general education with career education. The general education content will provide the contextual reference which can be adapted to accommodate various and changing work perspectives. General education also will provide options for decision making and will allow for predicting outcomes of alternative actions.

Undergraduate dental hygiene education that integrates broad general education with career education is compatible with, and adaptive to, the inclusion of new combinations of knowledge and skills from other disciplinary fields. For dental hygiene students to be prepared for future practice, they will need to acquire greater skill in transferring and applying theoretical perspectives from a variety of disciplines, particularly those in the biologic, social and behavioral sciences. If students are to be prepared adequately to use this knowledge, theoretical concepts from these fields need to be integrated more fully into the dental hygiene courses of study, so that they become part of the intrinsic structure of professional courses. In addition to providing general education content at more than an introductory level, the sequence of general education and professional courses must be conducive to concept building and application. Professional courses will need to be offered with a carefully planned prerequisite or concurrent foundation in the parent disciplines so that content will have breadth of knowledge and will extend beyond immediate application.

Strengthening general education in undergraduate dental hygiene education will require placing increased emphasis on analysis, synthesis and derivation. Modification of the basic organizational

sequence and structure of courses will be required for students to acquire knowledge that has use beyond the original learning intent. Concepts which have generalized use will need to be assimilated into the instructional content of each course and then adapted to the specific learning outcomes.

Not only must content in general education be increased and integrated with specialized professional education, the content of traditional specialized areas of study must be revised in scope and depth. Knowledge of oral diseases, their prevention, and therapy for their control has expanded well beyond what was known 30 to 40 years ago. Theories which were the basis for practice have been disproven or modified. Methods used to educate consumers also have been modified and new knowledge from behavioral and social sciences needs to be integrated into dental hygiene theory and applied in practice.

If dental hygienists are to be prepared as a major resource for health promotion and disease prevention, those who are graduated from dental hygiene educational programs must have a broader understanding of consumer/provider relationships, of multiple health care models which will accommodate different types of users, of non-health factors which affect the provision of health care, and of coordinating care for compromised consumers. Exercising increased discretionary skills in recognizing disease, in delivering hygiene services, in monitoring and referral procedures will require a broader substantive, theoretical knowledge base. Such a knowledge base also will be required for evaluating the accessibility, quality and cost-effectiveness of dental hygiene and other health care services. In addition, practice as projected will require development of diverse, sophisticated

intellectual skills. Educational preparation will necessitate an extended period of study.

It has been suggested that two levels of dental hygiene practice should be advanced as a means of standardizing curricular length. Dental hygiene practice, like other fields of endeavor, is comprised of the complex and relatively simple. Education for future practice and transition from the present to the future must integrate the broad theoretical and technical bases for adaptation. It is not feasible or practical to break out finite levels of complexity in the knowledge and skills required for current practice and to assign those levels to specific categories of dental hygienists. Health professions, particularly those with more limited scope of practice, have realized the importance of preparing generalists who are versatile and able to provide primary and secondary care. As primary care providers, dental hygienists must be prepared to employ all available dental hygiene interventions. They must be prepared to assimilate new knowledge and to utilize knowledge with discretion in a variety of practice settings with a variety of consumers. To purposely prepare some hygienists to utilize all dental hygiene interventions and prepare others to treat only superficial and simple problems would be to disenfranchise the latter hygienist and, more importantly, the receivers of their care.

Profound changes in the content and organization of individual dental hygiene curricula and in the structure of dental hygiene education will be required to prepare dental hygienists for future practice. Reorientation of dental hygiene education to accommodate a shift from the predominantly lower division specialized education to an integrated extended period of study with a broad general education base will be

required. This shift will allow for the reorganization of professional courses to prepare dental hygienists for twenty-first century practice.

CONCLUSION

A comprehensive review of changes in the demography, social structure and values of society has been made and has provided the basis for projecting future dental hygiene practice. The premise underlying the projections is that dental hygiene, as any profession, exists to meet a societal need. The mechanisms for meeting that need must be evaluated periodically and altered according to the outcome.

Trends indicate that dental hygiene's role in delivery of health services not only is important, but is increasingly relevant. However, significant changes in dental hygiene practice and education are needed to assure effective utilization of dental hygiene resources as health services delivery changes. Interaction and coordination with all professionals involved in delivering health services will be required.

The nature, scope and level of dental hygiene education required to prepare dental hygienists for future practice has been described. It will be profoundly different, incorporating new areas of study and expanding or refocusing traditional content and experiences.

In the *Prospectus* it is recognized that from its beginning the essence of dental hygiene practice has been health promotion and maintenance, and disease prevention. It also is acknowledged that the theoretical basis for practice has been drawn from the social,

biomedical and behavioral sciences and that the application of that theory in dental hygiene practice differentiates dental hygiene from other professions.

The American Dental Hygienists' Association has committed its resources to programs which will contribute to the orderly evolution of dental hygiene and is implementing programs to:

Strengthen alliances among dental hygiene practitioners in the public, private and educational sectors to facilitate the integration of dental hygiene research and services into appropriate levels of health care and to provide a more unified approach in the delivery and evaluation of dental hygiene care.

Focus research priorities on development of theory, assessment of the effectiveness of methods and technologies used in dental hygiene practice, and development of an epidemiological data base for making decisions on disease prevention and health promotion methods and priorities.

Obtain comprehensive, nationwide demographic data on dental hygienists to serve as a baseline for projecting manpower needs, making decisions regarding required educational resources, and initiating recruitment efforts.

Identify and implement strategies for changing the structure, curricular content and organization of dental hygiene

education to prepare dental hygienists for future practice and to assure viability in the higher education community.

Promote and support masters degree programs in dental hygiene education to provide the faculty resources and research required to further develop the scientific basis for dental hygiene practice.

Promote and support education of dental hygienists at the doctoral level in social, biomedical and behavioral sciences to develop scholars who are capable of formulating and conducting research which is based on existing theoretical constructs and has the potential for developing dental hygiene theory.

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